

Figure 2-14

Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service: A B C D E F

South Utah County
Section



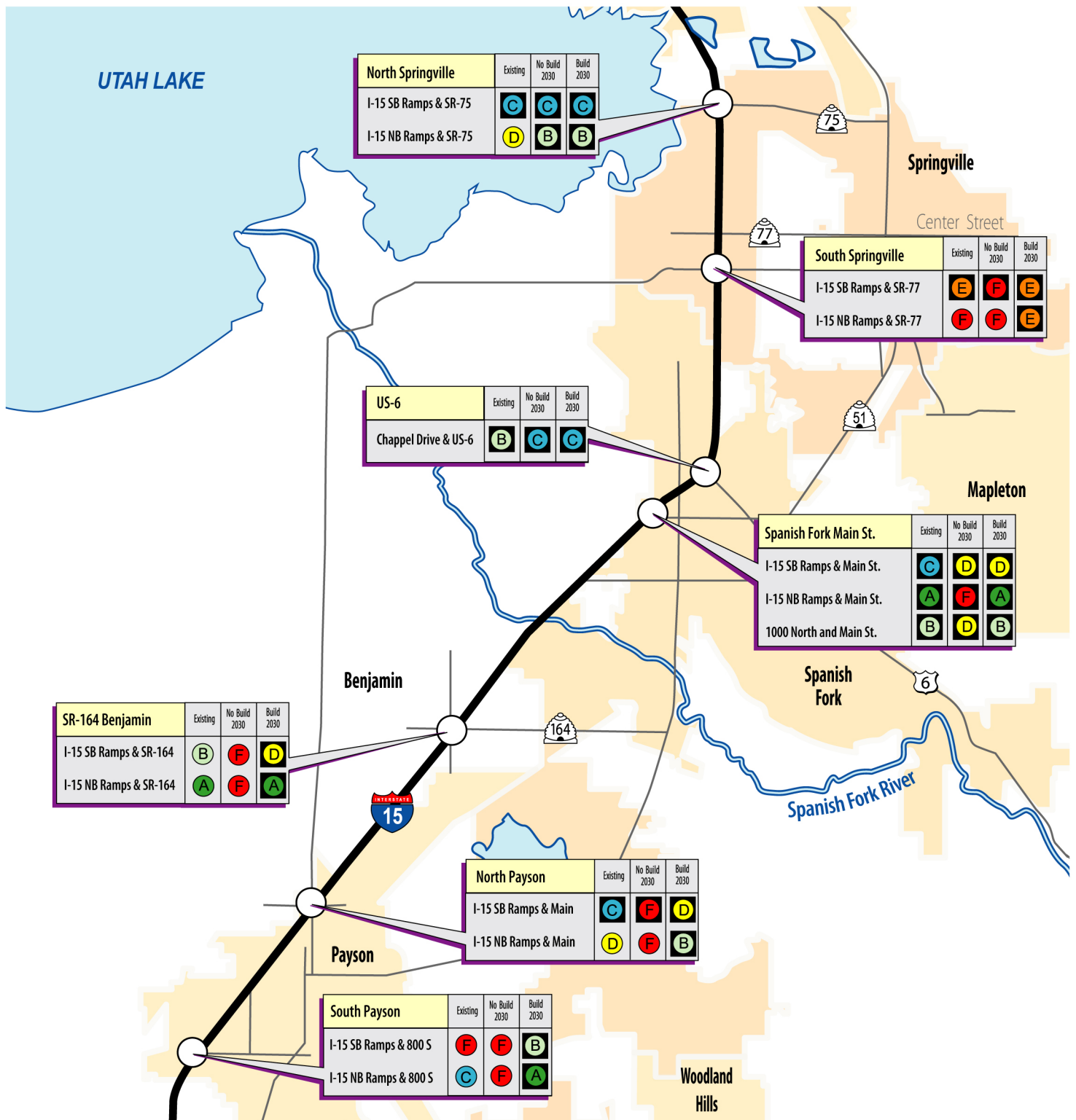


Figure 2-15

Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

South Utah County
Section





Figure 2-16
Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service: A B C D E F

Central Utah County
Section



I-15 CORRIDOR EIS | UTAH COUNTY - SALT LAKE COUNTY

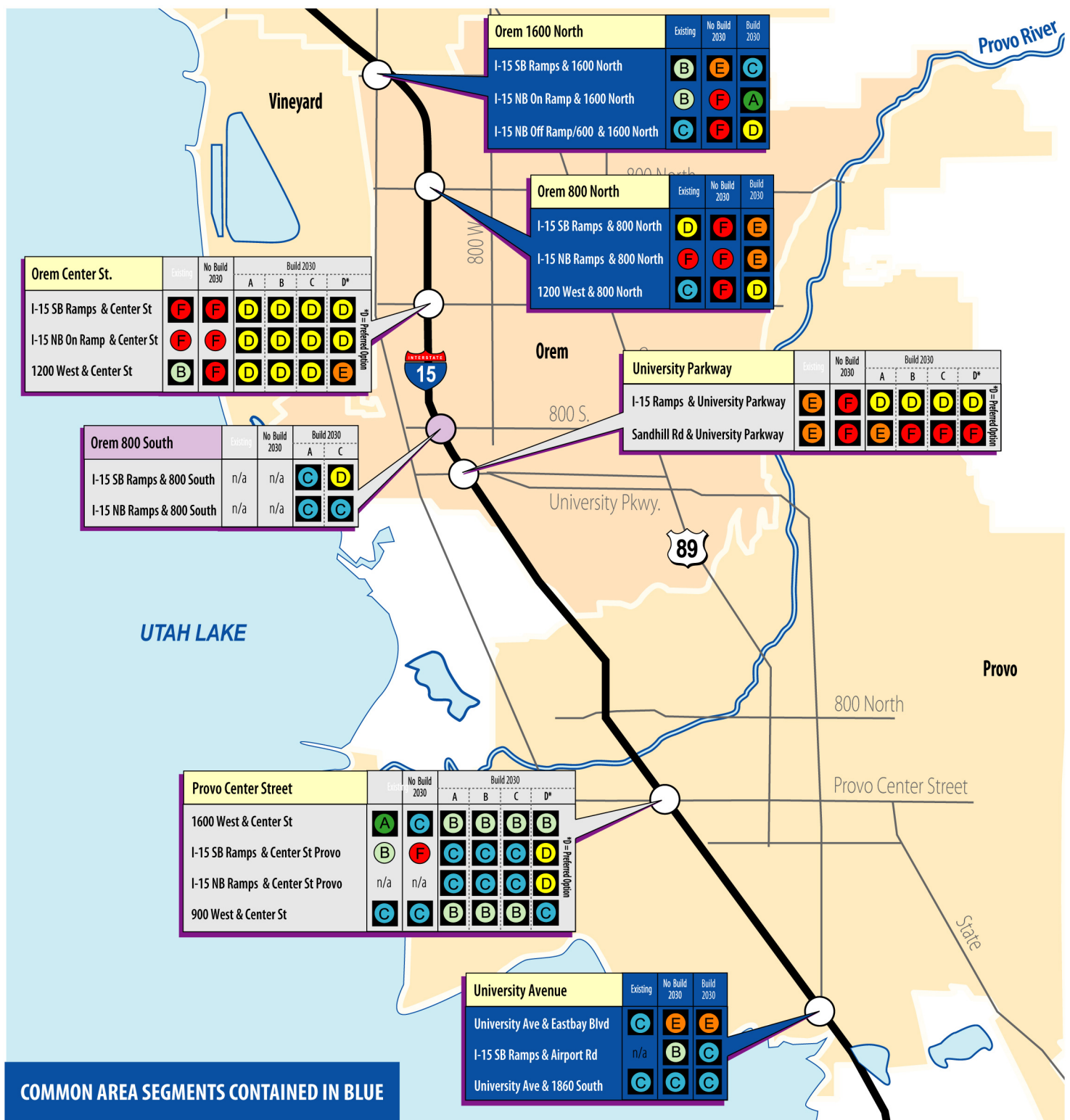


Figure 2-17

Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

Central Utah County
Section



The I-15 mainline segment from Provo Center Street to University Parkway improves from LOS E and F under Alternative 1 to LOS C under options A and B, and to LOS D under options C and D, in both directions. The northbound I-15 mainline segment from University Parkway to Orem Center Street improves to LOS C under options B, C, and D. LOS is D in Alternative 1 and Option A.

The WFRC/MAG travel model was used to analyze the overall 2030 daily surface street traffic delay within the area bounded by Orem Center Street to the north, State Street to the east, Provo Center Street to the south, and Geneva Road to the west. This analysis excluded I-15. The analysis shows that Option A performs best and has 30% less hours of surface street delay than Alternative 1 (Table 2-4). Option D (Preferred) does not include frontage roads or an I-15 interchange at Orem 800 South, and so does not offer any improvements in surface street delays.

Table 2-4: Option Area Surface Street Delay

	Delay (hrs)	% Difference vs. No Build
Alternative 1: No Build	3,920	N/A
Alternative 4: Option A	2,750	-30%
Alternative 4: Option B	3,410	-13%
Alternative 4: Option C	3,200	-19%
Alternative 4: Option D (Preferred)	3,930	0%

2.4.2.2 Common Area Traffic Operations

Figure 2-16 shows the existing and future mainline level-of-service in Central Utah County common areas. In 2030 under Alternative 1, one of the four mainline segments would operate at LOS E in both the northbound and southbound directions. Under Alternative 4, all four mainline segments operate at LOS D or better.

Figure 2-17 shows the existing and future levels-of-service for interchange components in Central Utah County common areas. In 2030 under Alternative 1, seven of the nine interchange components would operate at LOS E or F. Under Alternative 4, six of the nine interchange components would operate at LOS D or better.

2.4.3 Comparison of North Utah County Section Traffic Operations

As described in section 2.2.3.3, the North Utah County Section includes three interchange options at the American Fork Main Street Interchange. In addition, Alternative 4 includes a new North Lehi Interchange. Traffic analysis for the interchange components of the American Fork Main Street Interchange is presented separately from all common North Utah County Section options below. Traffic comparison for the new North Lehi interchange is presented separately in section 2.4.3.1.

Figure 2-18 shows the existing and future mainline level-of-service in North Utah County. In 2030 under Alternative 1, four of the five common area mainline segments would operate at LOS E or F in either the northbound or southbound direction. Under Alternative 4, all five common area mainline segments would operate at LOS D or better.

Figure 2-19 shows the existing and future levels-of-service for interchange components in North Utah County. In 2030 under Alternative 1, nine of thirteen common area interchange components would operate at LOS E or F. Under Alternative 4, all thirteen common area interchange components would operate at LOS D or better.

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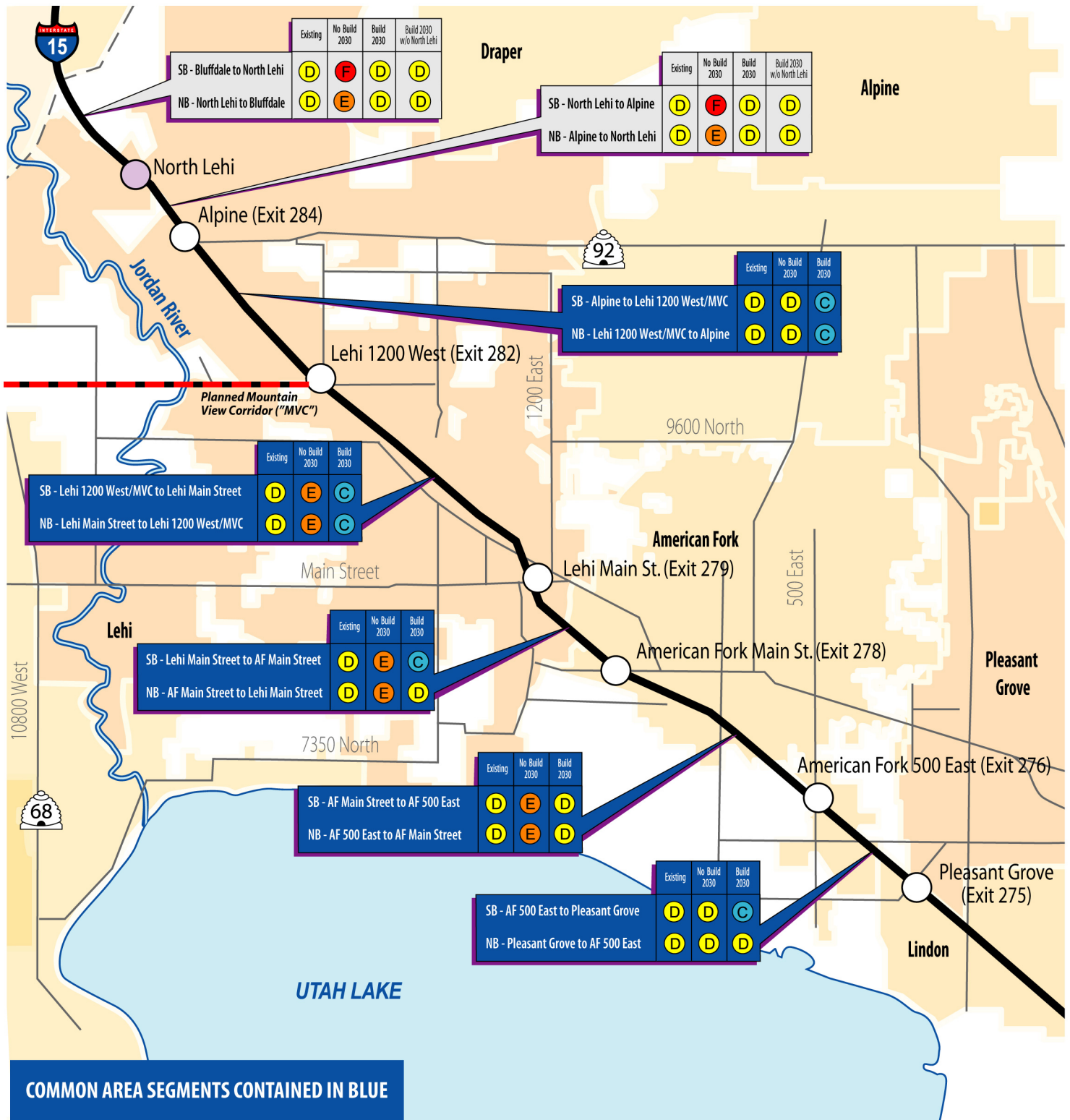


Figure 2-18

Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service: A B C D E F

Potential Interchange:

North Utah County Section



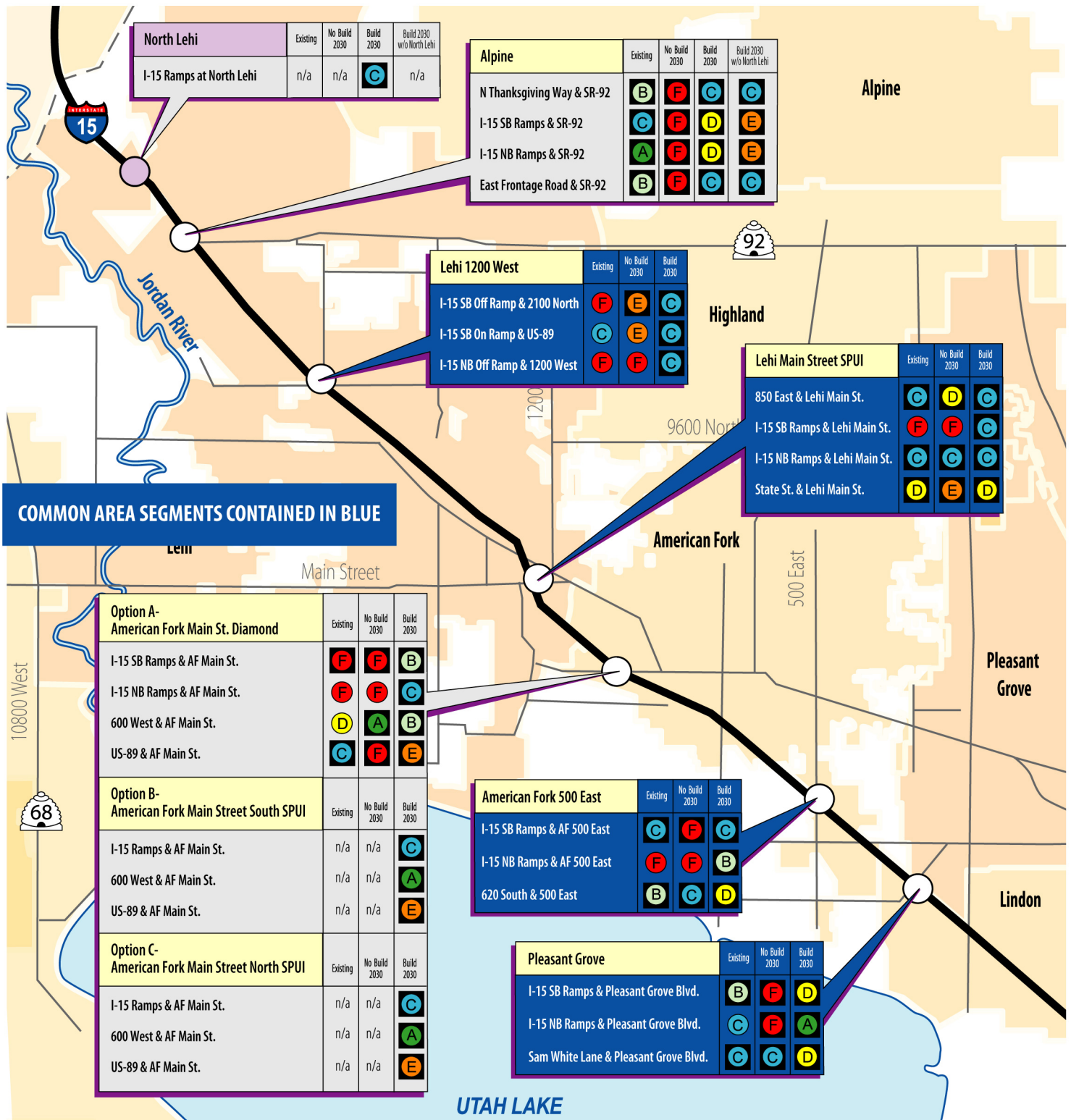


Figure 2-19

Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

North Utah County
Section



Figure 2-19 shows existing and future levels-of-service for interchange components at the American Fork Main Street Interchange. Under Alternative 1, three of four interchange components would operate at LOS E or F. Under Option A, three of four interchange components would operate at LOS D or better. Under options B and C two of three interchange components would operate at LOS D or better.

2.4.3.1 Traffic Comparison for New North Lehi Interchange

Figure 2-18 shows the existing and future mainline level-of-service from Alpine to North Lehi and from North Lehi to Bluffdale. In 2030 under Alternative 1, both mainline segments would operate at LOS E or F in either the northbound or southbound direction. Under Alternative 4 *without* the North Lehi Interchange, both mainline segments would operate at LOS D or better. Similarly with the North Lehi Interchange, both mainline segments would also operate at LOS D or better.

Figure 2-19 shows the existing and future levels-of-service for the Alpine and North Lehi interchange components. Figure 2-21 shows the existing and future levels-of-service for the Bluffdale interchange components. In 2030 under Alternative 1, six of eight interchange components would operate at LOS E or F. Under Alternative 4 *without* the new North Lehi Interchange, six of the eight interchange components would operate at LOS D or better. With the new North Lehi Interchange, all nine interchange components would operate at LOS D or better.

Under Alternative 4 with the new North Lehi Interchange, traffic volumes on the existing frontage roads between the Alpine Interchange and the new North Lehi Interchange can be expected to increase by approximately 50% over Alternative 1 (No Build). In 2030, the west frontage road (two travel lanes) is projected to carry approximately 8,000 vehicles per day with the new interchange, and the east frontage road (four travel lanes) is estimated to have approximately 25,000 vehicles per day. These volumes would result in LOS C or better for both frontage roads. Traffic volumes on SR-92 near the I-15/SR-92 interchange would decrease by about 18%.

2.4.4 Comparison of South Salt Lake County Section Traffic Operations

Figure 2-20 shows the existing and future mainline level-of-service in the South Salt Lake County Section. In 2030 under Alternative 1, both mainline segments would operate at LOS E or F in both directions. Under Alternative 4, one segment would operate at LOS F in both directions.

Figure 2-21 shows the existing and future levels-of-service for interchange components in South Salt Lake County. The interchange components associated with the Bluffdale Interchange were described above in Section 2.4.3.1. In 2030 under Alternative 1, none of the four interchange components would operate at LOS E or F. Under Alternative 4, all four interchange components would operate at LOS D or better.

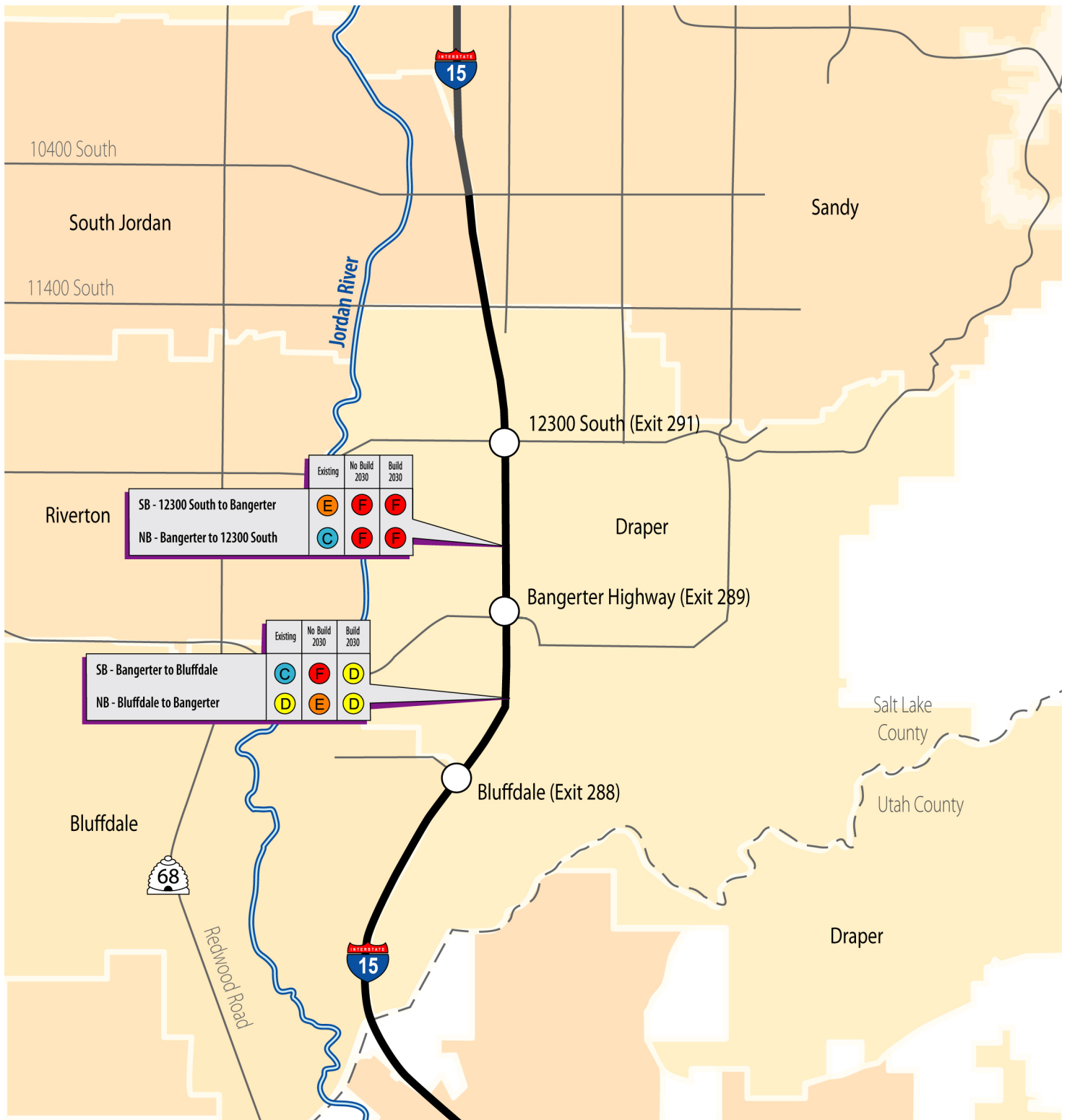


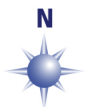
Figure 2-20

Mainline Level of Service – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service: A B C D E F

South Salt Lake County
Section



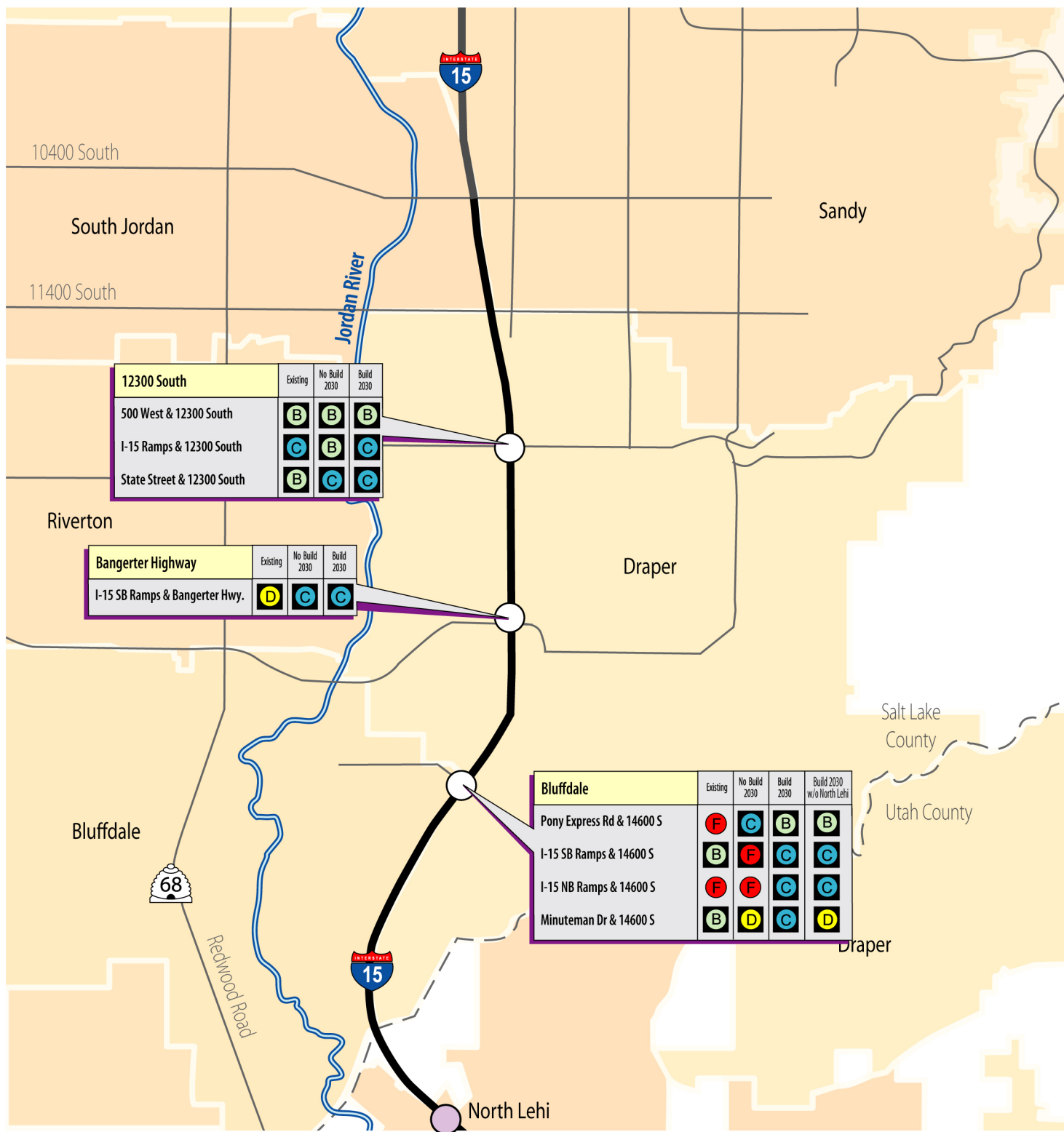


Figure 2-21

Intersection Level of Service PM Peak – Existing, 2030 No Build, and 2030 Build

LEGEND:

Level of Service at **Unsignalized** Intersections: A B C D E F

Level of Service at **Signalized** Intersections: A B C D E F

Potential Interchange:

South Salt Lake County
Section



2.4.5 Summary Comparison of Alternatives and Options

Table 2-5 presents a summary of the traffic analysis and comparison described above.

Table 2-5: LOS Summary Comparison

Section		Mainline Sections		Intersection Components	
		Total	LOS E or F	Total	LOS E or F
South Utah County Section					
	Alternative 1	7	6	14	9
	Alternative 4 (Preferred)	7	4	14	2
Central Utah County Section					
Common Area	Alternative 1	4	4	9	6
	Alternative 4 (Preferred)	4	1	9	1
Option Area	Alternative 1	2	2	9	6
	Alt 4 Option A	2	0	9	1
	Alt 4 Option B	2	0	9	1
	Alt 4 Option C	2	0	9	1
	Alt 4 Option D (Preferred)	2	0	9	2
North Utah County Section					
Common Area	Alternative 1	5	4	13	9
	Alternative 4 (Preferred)	5	0	13	0
American Fork Interchange	Alternative 1	N/A	N/A	4	3
	Alt 4 Option A	N/A	N/A	4	1
	Alt 4 Option B	N/A	N/A	3	1
	Alt 4 Option C (Preferred)	N/A	N/A	3	1
North Lehi	Alternative 1	2	2	8	6
	Alt 4 w/o Interchange	2	0	8	2
	Alt 4 w/ Interchange	2	0	9	0
South Salt Lake County Section					
	Alternative 1	2	2	4	0
	Alternative 4 (Preferred)	2	2	4	0

2.5 Impacts on the Transportation System

The improvements to the I-15 corridor under Alternative 4 would impact the adjacent roadway system in Utah and Salt Lake counties. To assess these impacts, traffic volumes and level of service were analyzed for select north-south and east-west roadways. The volumes were calculated by applying the daily volume changes forecasted by the WFRC/MAG travel model to existing roadway volumes. The HCM Arterial Planning methodology was used to develop a lookup table of daily volumes to approximate roadway level-of-service.

In the Central Utah County section, which includes the frontage road options, the north-south roadways are Geneva Road, Orem 1200 West, Orem 400 West, Orem Main Street, State Street and University Avenue. The east-west roadways are Orem Center Street, Orem 200 South, Orem 400 South, Orem 800 South, University Parkway, Provo 1740 North, Provo 820 North and Provo Center. The results of this analysis are summarized in Tables 2-6 and 2-7.

For the other three sections, the north-south-roadways are State Street, Geneva Road, Alpine Highway (SR-74), Redwood Road, and the proposed Mountain View Corridor. No east-west roadways are included in the analysis for this section of the corridor. The results of this analysis are summarized in Table 2-8.

Table 2-6: Volume and LOS on North/South Roadways - Central Utah County Section

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Geneva Road										
Orem 1600 N to Orem Center St	27,000	C	20,000	C	21,000	C	21,000	C	22,000	C
Orem Center St to University Pkwy	46,000	C	34,000	C	40,000	C	35,000	C	42,000	C
University Pkwy to Provo Center St	17,000	D	15,000	C	15,000	C	18,000	E	18,000	E
Orem 1200 West										
Orem 1600 N to Orem Center St	14,000	E	12,000	D	13,000	D	12,000	D	13,000	D
Orem Center St to Orem 800 S	17,000	F	6,300	C	15,000	F	6,600	C	15,000	F
Orem 400 West										
Orem 800 N to Orem Center St	9,700	D	9,100	D	9,200	D	9,100	D	9,300	D
Orem Center St to Orem 800 S	8,900	D	7,500	C	8,300	D	7,600	C	8,400	D
Orem 800 S to University Parkway	11,000	D	10,000	D	11,000	D	9,900	D	11,000	D
Orem Main Street										
Orem 800 S to University Parkway	5,300	C	5,200	C	5,400	C	5,000	C	5,200	C
University Pkwy to Orem 2000 S	8,100	D	11,000	D	11,000	D	7,900	C	8,100	D
Orem 2000 S to Provo 1730 N	7,400	C	15,000	F	15,000	F	7,000	C	7,300	C
State Street										
Orem 1600 N to Orem Center St	66,000	F	60,000	E	61,000	E	61,000	E	62,000	F
Orem Center St to University Pkwy	69,000	F	65,000	F	65,000	F	66,000	F	66,000	F
University Pkwy to Provo Center St	59,000	E	56,000	D	56,000	D	59,000	E	59,000	E
University Avenue										
University Pkwy to Provo Center St	60,000	E	59,000	E	59,000	E	59,000	E	60,000	E
Provo Center St to I-15	46,000	C	48,000	C	47,000	C	48,000	C	49,000	C

Table 2-7: Volume and LOS on East/West Roadways - Central Utah County Section

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Orem Center Street										
Geneva Rd to 1200 West	31,000	C	24,000	C	28,000	C	22,000	C	27,000	C
1200 West to 400 West	39,000	E	42,000	F	39,000	E	42,000	F	39,000	E
400 West to State Street	32,000	C	37,000	D	34,000	C	38,000	D	34,000	C
Orem 400 South										
Geneva Rd to 800 West	13,000	D	5,800	C	13,000	D	6,000	C	13,000	D
800 West to State Street	9,700	D	7,600	C	8,700	D	7,700	C	8,900	D
Orem 800 South										
800 West to 400 West	9,700	B	20,000	C	9,300	B	21,000	C	9,700	B
400 West to Main Street	15,000	C	19,000	C	15,000	C	19,000	C	16,000	C
Main Street to State Street	21,000	C	23,000	C	21,000	C	24,000	C	21,000	C
University Parkway										
Geneva Rd to I-15	37,000	C	24,000	C	33,000	C	26,000	C	37,000	C
I-15 to 400 West	51,000	C	52,000	C	47,000	C	59,000	E	55,000	C
400 West to State St	50,000	C	54,000	C	56,000	D	57,000	D	59,000	E

Table 2-7: Volume and LOS on EastWest Roadways - Central Utah County Section - continued

Location	Alternative 1 (No-Build)		Alternative 4 Option A		Alternative 4 Option B		Alternative 4 Option C		Alternative 4 Option D (Preferred)	
	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS	vehicles/ day	LOS
Orem 2000 South										
	5,700	C	6,900	C	6,800	C	5,800	C	5,900	C
	4,100	C	5,800	C	5,100	C	4,200	C	4,200	C
Geneva Rd to Sandhill Rd Sandhill Rd to Main St Main St to Columbia Lane	5,800	C	8,800	D	9,000	D	5,800	C	5,900	C
Provo 1740 North / Grandview Lane Sandhill Rd to Columbia Lane Columbia Lane to State Street	4,600	C	7,500	C	7,900	C	4,600	C	4,600	C
	8,200	D	7,600	C	7,700	C	8,300	D	8,500	D
Provo 820 North Geneva Rd to Independence Independence to 500 W 500 W to University Ave	17,000	C	23,000	C	22,000	C	17,000	C	17,000	C
	14,000	C	17,000	C	17,000	C	14,000	C	14,000	C
	27,000	C	25,000	C	25,000	C	24,000	C	24,000	C
Provo Center Street Geneva Rd to 900 West 900 West to 500 West 500 W to University Ave	21,000	C	27,000	C	27,000	C	31,000	C	31,000	C
	47,000	C	36,000	C	36,000	C	36,000	C	36,000	C
	20,000	C	21,000	C	21,000	C	19,000	C	20,000	C

Table 2-8: Volume and LOS – South Utah, North Utah and South Salt Lake County Sections

Roadway Segment	Alternative 1 (No Build)		Alternative 4 (Preferred)	
	Daily Volumes (vehicles per day)	LOS	Daily Volumes (vehicles per day) (change relative to Alternative 1)	LOS
State Street SR 77 to Provo 1860 South US 6 to SR 77	23,000 19,000	C E	22,000 (-4%) 18,000 (-6%)	C E
State Street Orem 1600 North to SR 74	48,000	C	42,000 (-13%)	C
Geneva Road Orem 1600 North to State Street	23,000	C	20,000 (-13%)	C
SR 74 State Street to SR 92	26,000	C	26,000 (0%)	C
Redwood Road SR 73 to County Line	10,000	B	8,000 (-21%)	B
Proposed Mountain View Corridor SR 73 to County Line	78,000	C	75,000 (-4%)	C
Redwood Road County Line to Bangerter Highway	20,000	C	15,000 (-25%)	C
Proposed Mountain View Corridor County Line to 13400 South	78,000	C	68,000 (-13%)	C

2.5.1 Summary of Transportation System Impacts

Several of the north/south roads would have substantial changes in traffic volumes and level-of-service between Alternative 1 and Alternative 4. These are Geneva Road, Orem 1200 West, Orem Main Street and State Street. For each road, traffic volumes are generated from the most recent MAG model (6.0). However, individual studies of particular corridors may need to modify the model to better suit local conditions. For that reason, volumes may differ between studies of differing scales. Those studies should be consulted for their own traffic volumes.

Geneva Road: Between Provo Center Street and University Parkway, volumes under Options A and B would be 15,000 vehicles per day. Under Options C and D (Preferred), the volume would be 18,000 vehicles per day and Geneva Road would operate at LOS E.

Orem 1200 West: Between Orem 800 South and Orem Center Street, 1200 West would see about a 60% decrease in traffic volume under Options A and C (with the Orem 800 South Interchange) and an improved LOS from F to C. Options B and D (Preferred) would reduce traffic volume by 12%; however, the LOS would remain at F.

Orem Main Street: Between Provo 1740 North and Orem 2000 South, volumes would more than double on Orem Main Street under Options A and B. The LOS would decrease from LOS C to LOS F. Between University Parkway and Orem 2000 South, volumes would increase by 36%, although the LOS would remain unchanged at D. The increase in volumes on Main Street is attributable to increased use of Orem Main Street to access I-15.

State Street: Traffic volumes on State Street between Provo Center Street and University Parkway would decrease by 5% under Options A and B, which would reduce the LOS from E to D. The volume and LOS would remain unchanged for the other options. Between Orem Center Street and Orem 1600 North, State Street volumes would decrease by 8% for Options B and C and by 9% for Option A. Each of these three options would reduce the LOS from F to E. Volumes would decrease by 6% for Option D (Preferred), but the LOS would remain at F.

The remaining north/south roadways would see minor changes in traffic volumes that would not improve or degrade the level-of-service relative to Alternative 1.

Several east/west roads would also see substantial changes in 2030 daily traffic volumes and/or LOS as a result of Alternative 4. These include Orem Center Street, Orem 800 South, University Parkway, and Orem 2000 South. The other east/west roadways would see minor changes in traffic volumes that would not improve or degrade LOS, as they relate to Alternative 1.

Orem Center Street: Between 1200 West and 400 West, Options A and C will increase traffic volumes by 8% and cause the LOS to drop from E to F. Options B and D (Preferred) will leave the volumes and LOS unchanged.

Orem 800 South: Between 800 West and 400 West, volumes would increase by 106% (Option A) or 116% (Option C); and, the LOS would decrease from B to C. Under Options B and D (Preferred), 800 South LOS would remain largely unchanged. Between 400 West and Orem Main Street, volumes would also increase by 27% under Options A and D (Preferred). However, the LOS would be C regardless of option.

University Parkway: Between 400 West and State Street, University Parkway volumes would increase by 18% and would operate at LOS E in Option D (Preferred). Option A would result in an 8% increase in traffic volumes with no change in LOS. Options B and C increase the volumes by 12% and 14%, respectively, which results in the LOS changing to D.

Orem 2000 South: Between Sandhill Road and Main Street, traffic volumes on 2000 South would increase by 41% (Option A) or 24% (Option B). Between Main Street and Columbia Lane traffic volumes would increase by 52% (Option A) or 55% (Option B). The LOS would be C for all segments and all options, except from Main Street to Columbia Lane, which would be LOS D under Options A and B.

Provo 1740 North / Grandview Lane: Between Sandhill Road and Columbia Lane, traffic volumes would increase by 63% (Option A) or 72% (Option B). The LOS would be C for all options. Between Columbia Lane and State Street, traffic volumes would experience a minor decrease and improve LOS from D to C, under Options A and B. Under Options C and D, the same segment would experience a minor increase in traffic volumes, with no change in LOS.

2.6 Joint Lead Agencies' Preferred Alternative

The Joint Lead Agencies have considered the traffic performance of Alternative 1 and Alternative 4, including all of the options through the Provo and Orem area, and the interchange options at American Fork Main Street. Based on those criteria, and in consideration of the environmental impacts documented in Chapters 3 and 4, the Joint Lead Agencies have identified Alternative 4, with Option C at American Fork Main Street (North SPUI), and Option D in the Provo/Orem area (a fly-over at University Parkway and round-about, with no frontage roads nor 800 South Interchange), as their Preferred Alternative. In summary, this alternative includes the following:

- Total reconstruction of I-15, including addition of general-purpose lanes to I-15;
- Extension of express lanes to US-6 in Spanish Fork;
- Reconstruction of existing interchanges;
- Construction of Option C at the American Fork Main Street Interchange;
- Construction of Option D in the Provo/Orem area;
- Construction of a new interchange at North Lehi;
- Improvements to bridges that cross the roadway;
- Improvements to connecting arterial streets;
- Construction of structures to accommodate new undercrossings at Provo 500 West and Orem 1200 North.

The Preferred Alternative has been selected after careful consideration of traffic performance, environmental impacts (Chapter 3) and all public comments (Appendix D). After comments regarding impacts to wetlands and other resources, elements of the Preferred Alternative have been refined. Refinements to Provo/Orem Option D include the re-alignment of Provo 820 North slightly south, and a slight shift in the I-15 mainline in the Orem 800 South area. Refinements to Option C in American Fork include alignment shifts, new retaining walls, and an additional lane on Main Street between I-15 and 300 East. Figure 2-22 illustrates the Preferred Alternative's level-of-service, relative to year 2005 conditions and Alternative 1 (No Build) conditions.

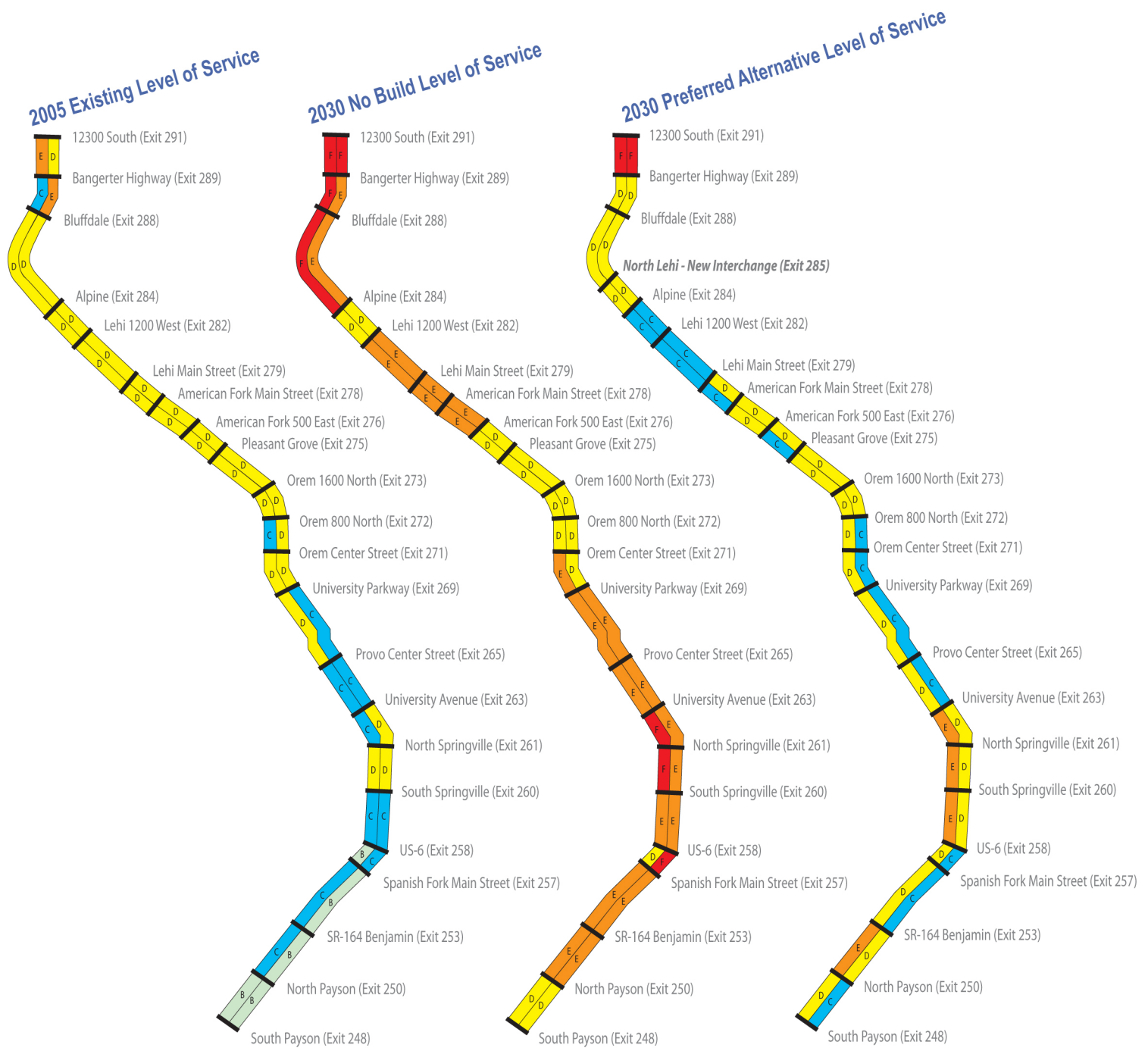


Figure 2-22
Mainline I-15: 2005, 2030 No Build, and 2030 Preferred Alternative Level of Service